

SERVICE MANUAL



PREAMPLIFIER

GFP-750

TABLE OF CONTENTS

Specifications	1
Parts List	2
Schematic	5
Board View	9
Semiconductors	10
Circuit Description	10
Voltage Conversion	12
Service Bulletin	13



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ADCOM GFP-750 Specifications

Output Level (Rated) 1.0V

THD+N @ Rated Output (20Hz to 20kHz)

Balanced	≤0.025%
Unbalanced	≤0.095%

THD+N @ Rated Output (1kHz)

Balanced	≤0.015%
Unbalanced	≤0.017%

Output Impedance

Balanced	<1200Ω
Unbalanced	<600Ω

Input Impedance

Balanced	94kΩ
Unbalanced	47kΩ

Frequency Response (Balanced and Unbalanced)

20Hz to 20kHz	+0, -0.25dB
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IM Distortions (@ Rated Output)

CCIF from 4kHz to 20kHz (Balanced)	≤0.009%
CCIF from 4kHz to 20kHz (Unbalanced)	≤0.035%
SMPTE (Balanced)	≤0.05%
SMPTE (Unbalanced)	≤0.05%

Signal to Noise Ratio (Ref. To 1 volt)

"A" Weighted (Balanced)	≥102dB
"A" Weighted (Unbalanced)	≥102dB

Input Sensitivity (@ Rated Output)

Balanced	183mV
Unbalanced	365mV

GENERAL SPECIFICATIONS

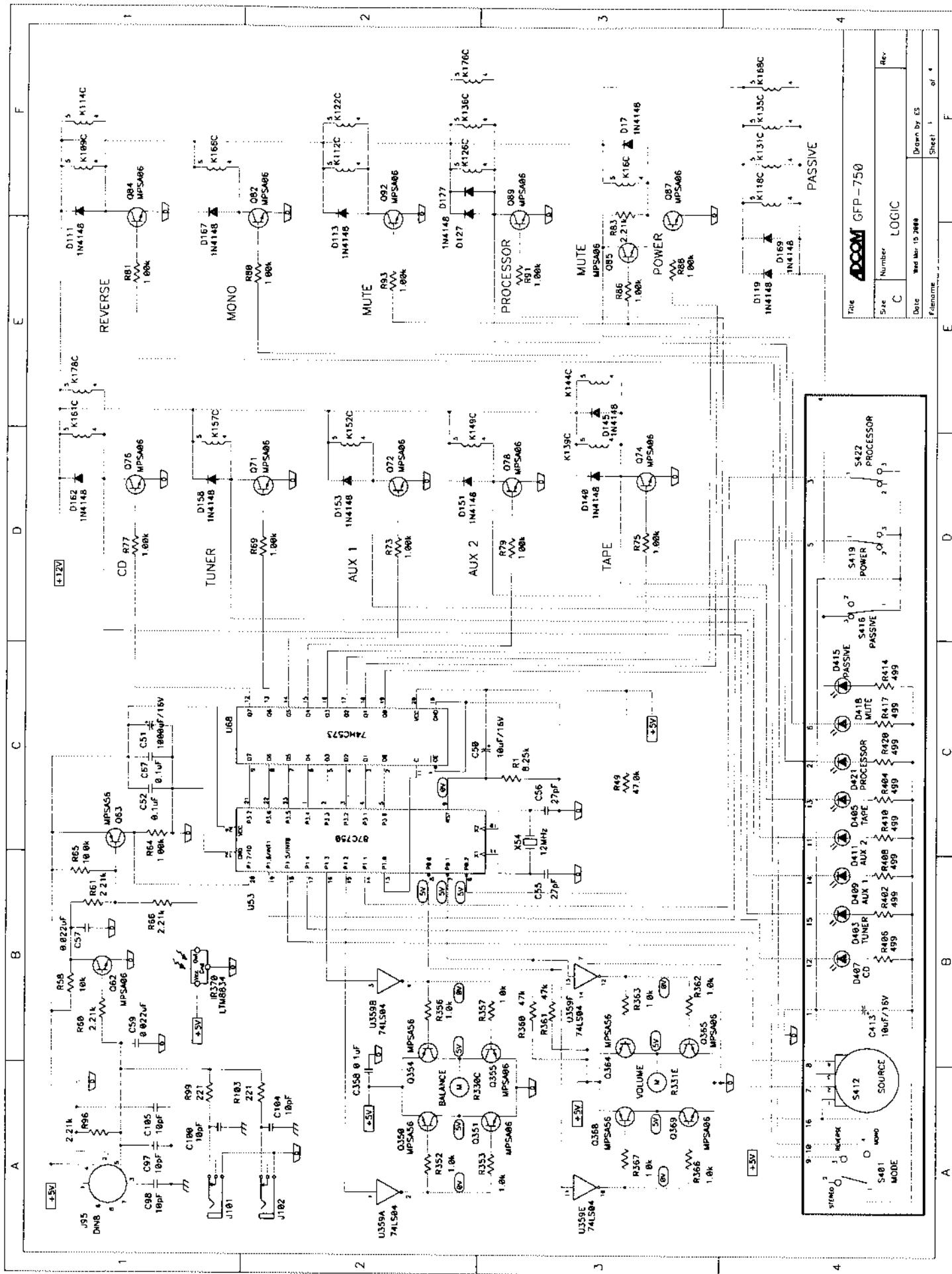
Power (available in 230V by special order)	115VAC-50/60Hz
Power Consumption	30VA
Chassis Dimensions	3 1/2" (89mm) x 17" (432mm) x 11" (279mm)
Maximum Dimensions	4 1/8" (105mm) x 17" (432mm) x 12" (305mm)
Weight	15lbs. (6.8kg)
Weight, Packed	17 lbs. (7.7kg)

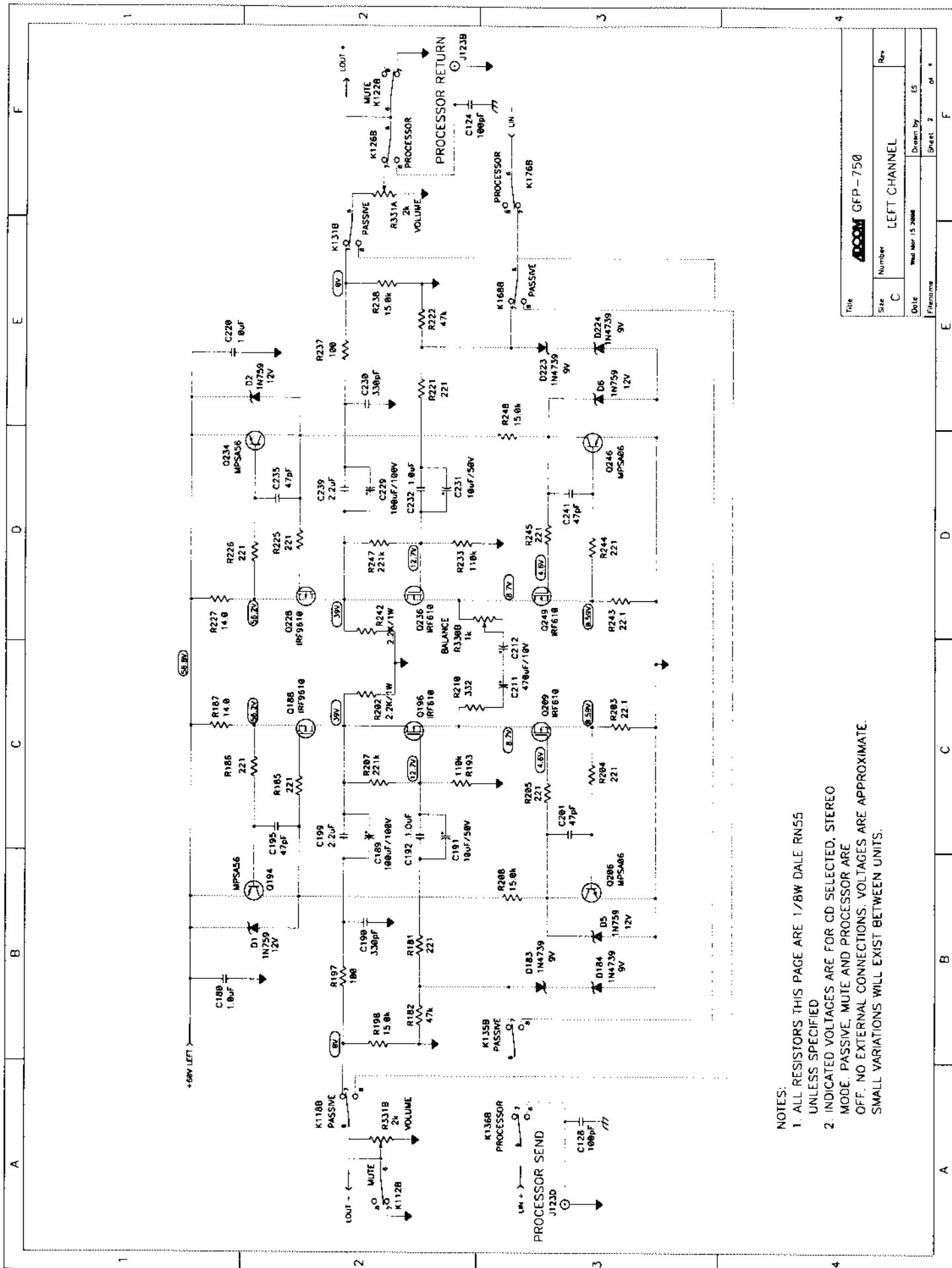
ACOM GFP-750 Service Parts List

SCHEMATIC LOCATION	DESCRIPTION	PART NUMBER
MAIN PCB	AD206-0002-C2	
Q28	2SC4793	33004793
Q39	LM7805	21007807
Q62, 71, 72, 74, 76, 78, 82, 84, 85, 87, 89, 92, 206, 246, 286, 326, 351, 355, 365, 369	MPSA06	33000600
Q63, 194, 234, 274, 314, 350, 354, 364, 368	MPSA56	33005600
Q188, 228, 268, 308	IRF9610	33009610
Q196, 209, 236, 249, 276, 289, 316, 329	IRF610	33000610
U53	87C750, programmed	21008775
U68	74HC573AN	21007457
U359	74LS04N	21000740
D1, 2, 3, 4, 5, 6, 7, 8	1N759A, 12V zener	16000759
D17, 111, 113, 119, 127, 140, 145, 151, 153, 158, 162, 167, 169, 177	1N4148	16004148
D19, 20, 21, 22, 30, 41, 42, 43, 44	1N4004	16004004
D32, 33, 34, 35, 36, 37, 38, 183, 184, 223, 224, 263, 264, 303, 304	1N4739, 9V zener	16004739
C9	0.01uF, 400V ceramic disc	12001510
C23, 25, 27	1000uF, 100WV electrolytic	12005265
C29, 189, 229, 269, 309	100uF, 100V electrolytic	12005225
C30	0.1uF, 100V axial ceramic	12001855
C52, 67	0.1uF, 50V axial ceramic	12002220
C40	2200uF, 50V electrolytic	12005175
C46	100uF, 25V electrolytic	12005020
C50	10uF, 16V axial electrolytic	12005145
C51	1000uF, 16V electrolytic	12005420
C55, 56	27pF, 50V axial ceramic	12002225
C57, 59	0.022uF, 50V axial ceramic	12003065
C97, 98, 100, 104, 105, 116, 117, 120, 121, 124, 125, 128, 129, 133, 134, 137, 138, 143, 146, 147, 148, 155, 156, 159, 160, 173, 174, 358	100pF, 50V axial ceramic	12002205
C107, 142	1.0uF, 50V layer	12001020
C163, 171, 191, 231, 271, 311	10uF, 50V electrolytic	12005100
C164, 172, 180, 192, 220, 232, 260, 272, 300, 312	1.0uF, 100V mylar	12001215
C190, 230, 270, 310	330pF, 400V polypropylene	12001395
C195, 201, 235, 241, 275, 281, 315, 321	47pF, 500V mica	12001365
C199, 239, 279, 319	2.2uF, 100V mylar	12001265

C211, 212, 291, 292	470uF, 10V electrolytic	12005410
R1	8.25k, 1/4W, 1% metal film	27004390
R24, 26	3.3 ohm, 1W, 5% metal oxide	27003385
R30, 99, 103, 181, 185, 186, 204, 205, 221, 225, 226, 244, 245, 261, 265, 266, 284, 285, 301, 305, 306, 324, 325	221 ohm, 1/8W, 1% dale RN55	27004675
R31, 60, 61, 66, 83, 96	2.21k, 1/4W, 1% metal film	27004070
R49, 360, 361	47k, 1/4W, 1% metal film	27004445
R58, 65	10.0k, 1/4W, 1% metal film	27004200
R64, 69, 73, 75, 77, 79, 80, 81, 86, 88, 91, 93, 352, 353, 356, 357, 362, 363, 366, 367	1.00k, 1/4W, 1% metal film	27004050
R182, 222, 262, 302	47k, 1/8W, 1% dale RN55	27004660
R187, 227, 267, 307	14.0 ohm, 1/8W, 1% dale RN55	27004655
R193, 233, 273, 313	110k, 1/8W, 1% dale RN55	27004665
R197, 237, 277, 317	100 ohm, 1/8, 1% dale RN55	27004635
R198, 208, 238, 248, 278, 288, 318, 328	15.0k, 1/8W, 1% dale RN55	27004680
R202, 242, 282, 322	2.2k, 1W, 5% metal oxide	27003395
R203, 243, 283, 323	22.1 ohm, 1/8W, 1% dale RN55	27004625
R207, 247, 287, 327	221k, 1/8W, 1% dale RN55	27004675
R210, 290	332 ohm, 1/8W, 1% dale RN55	27004645
R330A-B	1k Balance Pot	35007502
R331A-D	2k Volume Pot	35007501
 K16		
K109, 112, 114, 118, 122, 126, 131, 135, 136, 139, 144, 149, 152, 157, 161, 166, 168, 176, 178	main relay, 12VDC switching relay	28000751 28000750
 S3		
	Power switch/standby rear panel	37000750
 J1		
J95	AC Jack	25000750
J101, 102	8 pin DIN	22001060
J106, 108	3.5mm IR input jack	22001575
J115, 123, 132, 141, 154	XLR male	22000751
J165, 175	4P RCA Jack	22000750
	XLR female	22005802
 F2 (120V)		
F11 (120V)	2A, 250V, 5mm SLB	19009201
F12 (120V)	500mA, 250V, 5mm	19009050
	1A, 250V, 5mm SLB	19009101
 L45, 47		
	2uH ferrite bead	14000750
 IR370		
X54	Remote control receiver	21008834
T1	Crystal, 12MHz	18000750
	Transformer, multivoltage toroid	24000750

FRONT PANEL PCB	AD-206-0002-C2	
D403, 405, 407, 409, 411, 415, 418, 421	Red LED	16002048
	LED Holder	47000750
C413	10uF, 16V axial electrolytic	12005145
R402, 404, 406, 408, 410, 414, 417, 420	499 ohm, 1/4W, 1% metal film	27004540
S401	Rotary Stereo Select Switch	37000751
S412	Source Select Rotary Encoder	37000754
S416	Passive Switch	37000753
S419, 422	Power and Processor Switch	37000752
HARDWARE		
J8	Rear panel "switched AC outlet" (120V version)	25000750
	J8 wire set, red and black (120V version)	48000075
	"switched AC outlet" block plate (240V version)	25001002
	Front Panel	13002750
	Main Chassis	13002753
	Top Cover	13002752
	Top Cover Hex Screw	49000750
	Gold Plate	13002751
	Rubber Feet	13005805
	Heat Sink	13002754
	Source Select Knob, no Notch	23000751
	Volume, Balance, Stereo Knob w/Notch	23000750
	Power Cord, 18AWG (120V version)	15001105
	XLR Shorting plug	22001445
	Remote Control	RC750
	Owner's Manual	26001430
	Shipping Box	39001460
	Packing Foam	40001460



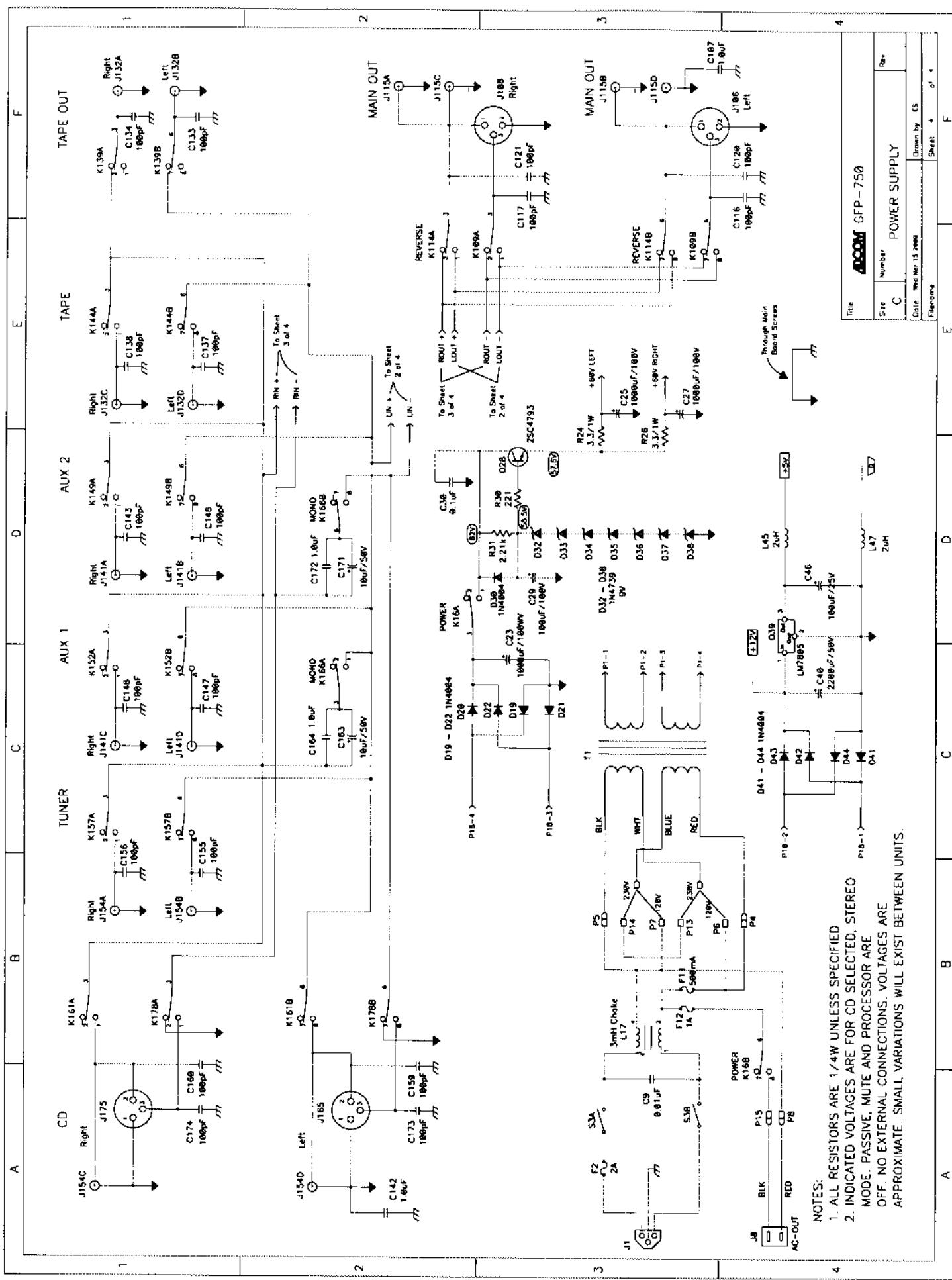


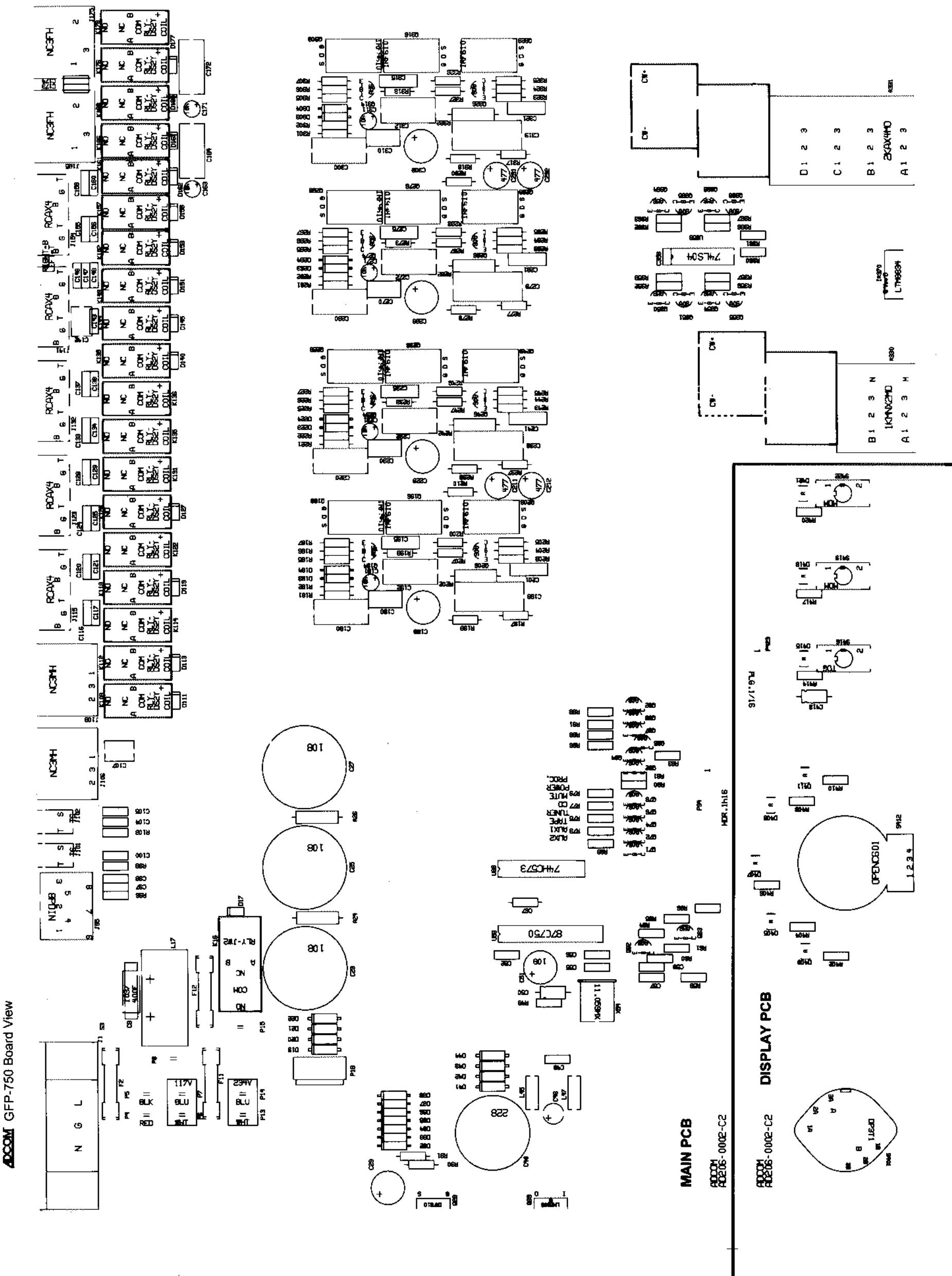
NOTES:
1. ALL RESISTORS THIS PAGE ARE 1/8W DALE RN55

UNLESS SPECIFIED

2. INDICATED VOLTTAGES ARE FOR CD SELECTED, STEREO MODE. PASSIVE, MUTE AND PROCESSOR ARE OFF. NO EXTERNAL CONNECTIONS. VOLTTAGES ARE APPROXIMATE. SMALL VARIATIONS WILL EXIST BETWEEN UNITS.

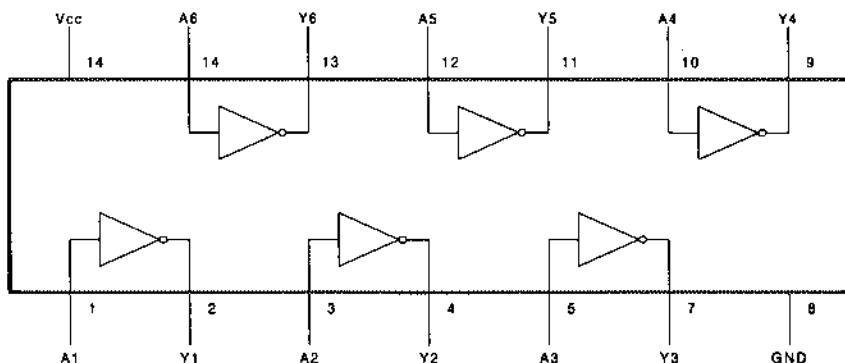
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Date	File name	Street 2	ct



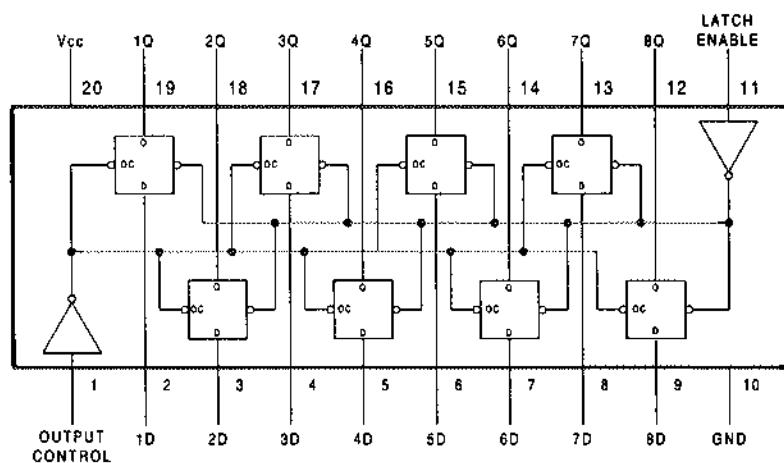


ADCOM GFP-750 Semiconductor Block Diagrams

U359 74LS04 - Hex Inverter



U68 74HC573 - Tri-State Octal D-Type Latch



Output Control	Latch Enable	Data	Output	
L	H	H	H	H = high level, L = low level
L	H	H	L	Q ₀ = level of output before steady-state input conditions were established
L	L	X	Q ₀	Z = high impedance
H	X	X	Z	X = don't care

ADCOM GFP-750 Circuit Description

Power Supply

The power supply consists of two supplies each connected to a separate secondary winding of transformer T1. The first, a +12V unregulated supply, is formed by D41-D43 and filter capacitor C40 and is used to power the various relay coils. From this a regulated 5V line is derived by Q39, C46 and choke L45, L47 to run the control circuitry of U53, U68, volume and balance motor drives and front panel LEDs.

The second supply is formed by rectifier diodes D19-D22, capacitor C23 and the regulator circuit of Q28. This +60V supply is distributed to the preamp circuit of both channels.

Signal Path

The selected signal source is switched to the preamplifier circuit through a bank of relays controlled by U53. Only the CD source has an option for balanced input operation. **If the CD input is operated with an unbalanced source, external jumpers must be placed in XLR jacks J165 and J175 to connect pins 1 and 3. The GFP-750 is shipped with these jumpers in place (part # 22001445). This shorts**

the RIN- and LIN- lines to signal ground. For all other sources, RIN- and LIN- are connected to signal ground via K161 and K178. TAPE input mode connects the tape inputs to RIN+ and LIN+ through K144 to the preamp circuit AND disconnects tape out jacks J132A and J132B. MONO relay K166 AC couples the RIN+ and LIN+ lines together through C163 and C164 for mono operation.

The discrete preamplifier circuit is the same for both left and right channels. Unbalanced operation of the left channel is described here. Reference numbers are different for the right channel. Q188 and Q228 are constant current sources regulated by transistors Q194 and Q234 respectively. Q209 and Q249 are constant current sinks regulated by Q206 and Q246 respectively. Q196 and Q236 operate as a differential pair at audio frequencies. The LIN+ signal is AC coupled to Q196 gate through C191 and C192. The LIN- signal (which is shorted to signal ground for unbalanced sources) is AC coupled to Q236 gate through C232 and C231. The signal voltage variation at Q196 gate modulates the drain current of Q196 directly and the drain current of Q236 indirectly via R210, C211, C212 and balance pot R330B. The produced variations cause similar current variations through drain resistors R202 and R242 producing the output voltage signals at the drains of Q196 and Q236. The two signals are equal amplitude and opposite polarity. These output signals are AC coupled through capacitors C199, C189, C239 and C229 to the output jacks J108, J106 and J115A-D for either balanced or unbalanced output (regardless of input mode). Relays K114 and K109 determine the output mode (STEREO, REVERSE).

In passive mode LIN+ and LIN- are diverted around the preamp circuit by K118, K131, K135 and K168. Only volume pot R331 remains in the signal path. PROCESSOR relays K136 and K126 divert the LIN+ signal through the PROCESSOR jacks J123D out and J123B in to the LOUT+ output. MUTE relays K122 and K112 short the LOUT+ and LOUT- signals to ground at the volume pot wiper.

Control Circuitry

Microcontroller U53 performs most of the state switching of the GFP-750. Its operating frequency is set by X54, C55 and C56 to 12MHz. Port 1 of U53 (pins 13 – 20) is used as both an input and output. The input pins receive the remote control signal, monitor the POWER switch, S419, the PROCESSOR switch, S422, and the SOURCE rotary encoder, S412. The output pins control the balance pot motor and U68 latch enable.

U53 Port 3 (pins 1-5 and 21-23) outputs a parallel 8-bit control word. This 8-bit word is latched through U68 from input pins 2 – 9 to output pins 12 – 19. This latched word controls the 8 relay drive transistors for the CD, TUNER, AUX 1, AUX 2, TAPE, POWER, MUTE and PROCESSOR sources. When the user changes sources a new 8-bit word is produced at U53 Port 3 and latched through U68 to change the state of the relays. The latching of the word is marked by a momentary 5V pulse on U68 pin 11.

U53 Port 0 (pins 6-8) controls the volume motor.

The U53 reset pin (pin 9) time constant is set by C50 and R1. Pin 9 will be pulled high momentarily at power up when back panel switch S3 is switched on.

Remote control signals are received either through J95 and Q62 or IR receiver IR370. These signals are sent to U53 via buffer/amplifier Q63.

The REVERSE and MONO relay circuits, Q84, K109, K114, Q82 and K166, are driven directly by MODE switch S401. PASSIVE mode relays K118, K131, K135 and K168 are driven directly by S416.

U359 and transistors Q350, Q351, Q354, Q355, Q364, Q365, Q368 and Q369 drive the balance and volume motors.

ADCOM GFP-750 Voltage Conversion

Converting from 120V to 240V operation

1. Disconnect the AC cord and remove the top cover
2. Move the blue secondary wire from P7 to P14 and move the white secondary wire from P6 to P13 - see figure 1 below.
3. Change fuse F2 to 1A/250V SLB.
4. Change fuse F11 to 250mA/250V SLB.
5. Remove fuse F12.
6. Remove the rear panel mounted "switched AC-outlet" jack (J8 on schematic) and the black and red connecting leads from the jack to P15 and P8 on the circuit board. Cover the chassis hole with rubber blocking plate (ADCOM part #:25001002).

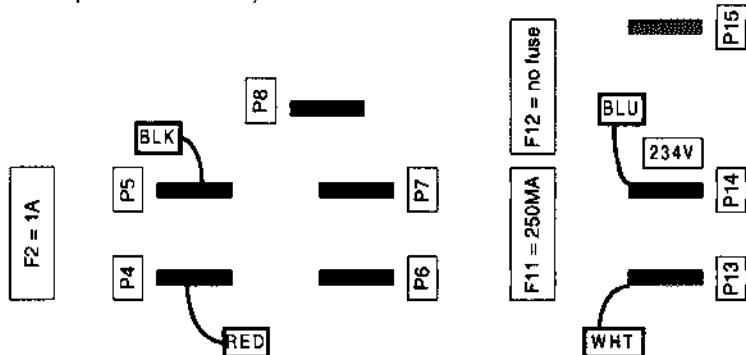


Figure 1: Main transformer connections and fuse values for 240V operation.

Converting from 240V to 120V operation

1. Disconnect the AC cord and remove the top cover
2. Move the blue secondary wire from P14 to P7 and move the white secondary wire from P13 to P6 - see figure 2 below.
3. Change fuse F2 to 2A/250V SLB.
4. Change fuse F11 to 500mA/250V SLB.
5. Change fuse F12 to 1A/250V SLB.
6. (Optional) The GFP-750 240V version does not have a rear panel mounted "switched AC-outlet" jack. The position for this jack, at the top right hand side of the rear panel, has been blocked with a rubber plate on 240V versions. To add the "switched AC-outlet" you will need the female AC jack (ADCOM part #:25000750) and connecting wire set (ADCOM part #:48000075). Remove the rubber block and mount the AC-jack to the rear panel. Connect the black wire from P15 on the circuit board to the neutral (larger slot) connection of the new switched AC jack. Connect the red wire from P8 on the circuit board to the live (smaller slot) connection on the new switched AC jack.

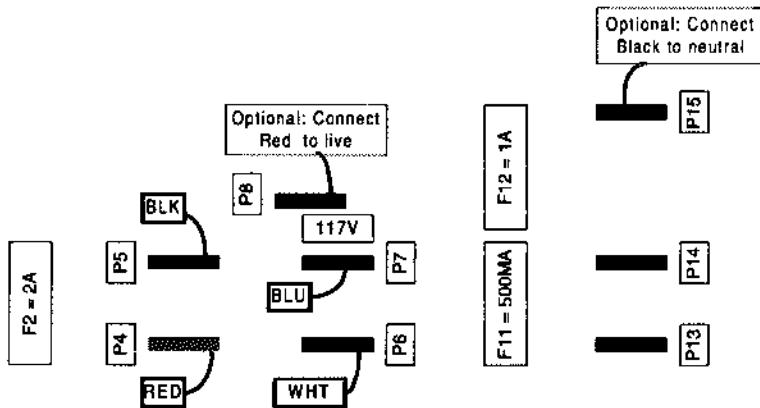


Figure 2: Main transformer connections and fuse values for 120V operation

ADCOM Service Bulletin

Date: May 29, 1998

Model: GFP-750

Bulletin: GFP-750-1

Complaint: Failed power supply

Some early runs of the GFP-750 used an IRF610 FET as the high voltage supply regulator (Figure 1). In the event that a unit comes in with a failed regulator circuit, it should be updated to the BJT circuit shown in Figure 2.

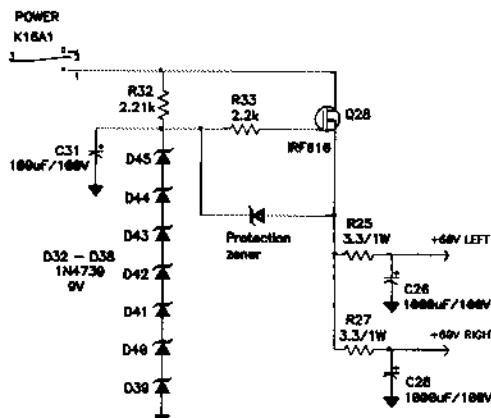


Figure 1

Modification:

1. Add a 1N4004 diode (D30, Adcom part # 16004004) as shown across R31.
2. Change Q28 from an IRF610 to a 2SC4793 (part # 33004793) and remove the protection zener. As shown, the collector goes to the power relay, the base to R30 and the emitter to R24, R26.
3. Change R30 to 221 ohm 1/8W (part # 27004675).
4. Add a 0.1uF/100V cap (C30) from Q28 collector to ground.

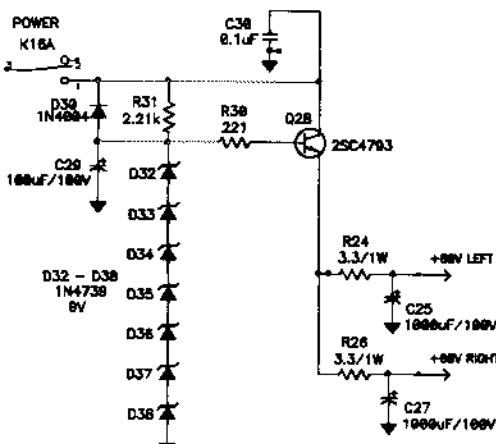


Figure 2